Space Weather Forecast

Issued on Saturday, 07 October 2023 at 13:20 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: Chance of Moderate-class flares throughout.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar Activity is Low, with only minor Common-class flares observed in the last 24 hours. There are seven sunspot regions on the visible disc. The two largest regions are in the northwest of the disc. The northernmost region is magnetically complex. A small region near south centre disc, whilst having very small spots, has a somewhat complex magnetic configuration. The remaining regions all appear to be small and mostly simple at present.

Whilst there have been a couple of Coronal Mass Ejections (CMEs) assessed from the Sun in the last 24 hours, neither are expected to give significant impacts at Earth.

Solar Wind / Geomagnetic Activity: Solar winds have gradually declined to background levels. Total magnetic field strength has been mostly weak. The north-south component varied weakly. Geomagnetic activity has been Quiet to Unsettled (Kp 1-3).

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) remained at background levels, with no solar radiation storms observed.

Four-Day Space Weather Forecast Summary

Solar Activity: Mainly Low with a chance of Moderate flare activity, mainly from the two larger regions in the northwest of the disc.

Solar Wind / Geomagnetic Activity: Wind speeds are currently background, and are expected to remain so until the High Speed Streams of two successive coronal holes arrive at Earth later on Day 3 (09 Oct) and into Day 4 (10 Oct), with wind speeds perhaps reaching elevated levels. Mostly Quiet to Unsettled geomagnetic activity is expected. There is chance of Active intervals on Days 3 and 4, with a slight chance of G1/Minor storm periods.

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) is most likely to remain at background levels, with a very low risk of enhancements from the current sunspots on the disc.

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Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	1	1	10	10
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	No	30	30	30	30
Very Active	R3 to R5 X	No	5	5	5	5

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	5	5	5	5
Very Active	≥ S3 *	No	1	1	1	1

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)

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